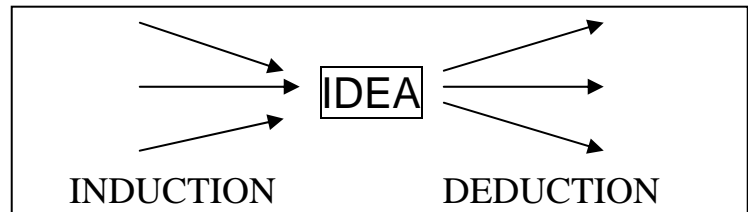


SCIENCE ≡ systematic process of learning about the natural (physical) world

From Latin *scientia* = “to know” (as in “sentient” being)

Reason from the specific to the general (“induction”) then back to specifics (“deduction”)



Very powerful but limited.

Science attempts to discover **general rules** of how the universe works but cannot advance question of why.  
(metaphysics=after physics)

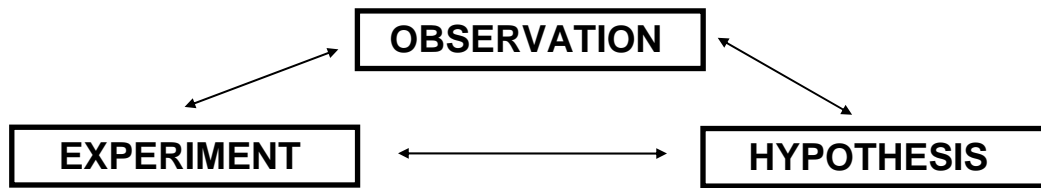
Because science deals with only physical world it can lead to mistake of Naturalism (materialism) = belief that matter & energy are **all** there is.

Can't prove God scientifically because science denies the “supernatural” *a priori*. (supernatural = “outside nature”)

Science only useful for material universe (matter & energy)  
Not for morals, ethics, religion.

Scientific method: (simple version)

(Observation + hypothesis = empiricism)



## 1) Observations

- quantitative (exp. “83°” not “its hot” = qualitative)
- free from bias or interpretation (Black sheep story)

## 2) Hypothesis

- explains the observations
- consistent with all knowledge (i.e. reasonable)
- not unnecessarily complex (Ocham’s razor)
- predicts ∴ is testable

## 3) Experiment

- unambiguously tests the hypothesis
- repeatable
- experiment doesn’t affect outcome
- 

Science cannot prove an idea absolutely, can only disprove.

## 1) Hypothesis:

- put forward without proof
- tentative, subject to revision or rejection

## 2) Theory: (most scientific knowledge is here)

- survived repeated testing
- useful, widely accepted

## 3) Law:

- quantitative, mathematical (physics)
- very fundamental “rule” of nature

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**MODEL**  $\equiv$  idea or construct that exhibits some of the behavior of the real thing

Examples:

- map, globe, computer program, equation, wind tunnel

Model is less than the real thing  $\therefore$  falls short in prediction

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Articles of faith of science (accepted without proof  $\therefore$  faith)

- 1) There is a reality external to us (not illusion or created by us)  
[ontology = theory of being]
- 2) Reality is as we perceive it (senses reveal real world)  
[epistemology = theory of knowing] (“The Matrix”)
- 3) Reality is consistent in space and time (rules don’t change)
- 4) Reality is understandable by us (“God may be subtle but he is no malicious.” – A. Einstein).